

EXHIBIT IV**Richard S. Norek**

8 Garrison Drive, Eliot, Maine 03903-1626, USA
<http://www.norektech.com>

Telephone/Fax: (207) 439-2821
 e-mail: Rnorek@ghi.net

GENERAL ELECTRIC • Design/Development Engineer • 13 Years*Schenectady, NY*

A designer of 14 turbine models with firing temperatures ranging from 1750°F to 2400°F and power from 11,000hp to 200,000hp. Developed expertise in hot gas path components, superalloy metallurgy, hot corrosion protection, high speed impact, fracture mechanics, rigorous failure investigation and life prediction, compressor and turbine aerodynamics, vibrations and rotor dynamics.

- Applied advanced engineering tools to the design engineering practice.
- Corrected expeditiously various teething problems in new gas turbines.
- Provided engineering expertise to manufacturing, product service and service shop engineers supporting over 1,000 gas turbines worldwide.

Achievements:

- Diagnosed second stage nozzle excessive downstream creep deflection.
- Explained a parasitic natural frequency in a second stage bucket.
- Determined the causes and eliminated catastrophic rotor bolt failure.
- Proposed design improvements, and directed a program in the field for installation of a first stage nozzle with 80% greater life than its predecessor.
- Implemented a major design change to introduce aircraft-type insulation encased in stainless steel foil in heavy-duty turbines and alleviated out of roundness of the turbine inner casings.
- Diagnosed and eliminated overheating of the outer combustion casings in recuperative turbines—*increased operating life of recuperators.*

DANISH TECHNICAL UNIV. • Lecturer • 2 Years*Copenhagen, Denmark*

Taught design of internal combustion engines and machine elements. Worked on vibrations with material damping and on design of centrifugal clutches.

Achievement:

- Developed and published a theory of centrifugal clutches with floating links and novel, non-symmetric shoes, capable of either rigid locking or easy slip at full speed.

POLISH ACADEMY OF SCIENCES • Sr. Research Assistant • 5 yrs*Gdansk, Poland*

Fluid Flow Machinery Institute, Dynamics Laboratory, Gdansk, Poland.

Studied Mathematics at Warsaw University, investigated material damping, and submitted a patent disclosure for a test device to measure the decrement of amplitude during torsional vibrations.

PROFESSIONAL ACTIVITY

Member of the American Society of Mechanical Engineers (ASME), International Gas Turbine Institute (IGTI), Committee on Oil and Gas and Applications, Former Vice President of Saudi Arabia Eastern Province Chapter of ASME International, Member (1980-1997) of the Gas Turbine Users Association (GTUA). Presented technical papers at the ASME, GTUA and Electric Power Research Institute (EPRI) meetings. 25 publications.

Education

Rensselaer Polytechnic Institute, Troy, NY
 Warsaw University, Mathematics Department, Poland
 Gdansk Polytechnic Institute, Gdansk, Poland

MSME
 Advanced Studies
 BS, MME

Richard S. Norek

8 Garrison Drive, Eliot, Maine 03903-1626, USA
http://www.norektech.com

Telephone/Fax: (207) 439-2821
e-mail: Rnorek@ghi.net

MISSION

To deliver, as the most valuable resource to the gas turbine owner, the immediate benefits of:
Solving existing problems.
Preventing evident future failures.
Utilizing untapped potential for improvements in turbine units and accessory systems.

To achieve these benefits by employing, modern, effective, multi-disciplinary engineering methods proven in the field to significantly reduce ownership cost.

PROFILE

Accomplished consultant, field researcher, expert failure investigator, senior gas turbine designer. Skilled in correcting both design and field problems of any complexity, and successful in implementing efficient programs for increasing equipment life, reliability and profitability.

CAREER

Operations

- Internal consultant to: world's largest oil company's Corporate Management, Crude Production on/offshore, Projects and Purchasing, Crude & Liquid Gas Pipelines, Power Generation, Refineries, Gas Processing, and Maintenance Shop.
- External consultant to companies in Kuwait, Oman, Italy and Venezuela.

Manufacture

For the largest manufacturer of gas turbines, provided services of Gas Turbine Design, Development & Manufacturing, Customer Service, Repair & Rejuvenation.

Academic

Test, University, Mech. Dept., Turbomachinery Institute.

Technology - Applies the state of the art, multi-discipline—structural analysis, heat transfer, metallurgy, aerodynamics, etc.—engineering approach to solve design, operation and maintenance problems of gas and steam turbines. Service is custom tailored to the user's needs and is based on thorough investigation, accurate analysis and practical, expedient and cost-effective problem solving. This approach has transformed many costly, forced turbine outages into reliable, profitable operation.

Leadership - Provided, as lead turbine expert in Saudi Aramco, technical direction on utilization of turbines to corporate management, all Saudi Aramco departments worldwide, a project company in Italy, and other oil companies in Kuwait, Oman and Venezuela. Directed international technical exchange between in-house organizations and engineering societies. Led field research, life improvement programs, failure investigations and corrective actions. Created and implemented a unique training program with foreign manufacturers for young engineers to develop future turbine specialists.

Experience - Turbine operation and maintenance, design and manufacture, and teaching and research.

SAUDI ARAMCO • Engineering Specialist • 18 Years

Dhahran, Saudi Arabia

- Responsible for the overall performance of diversified gas turbine fleet
 - 214 units, 22 models by 14 factories, operating in the harsh desert environment.
 - Equal mix of heavy industrial and light air-derivative.
 - New to 34 years old, including GE MS5-2 world fleet leader with over 200,000 hours.
 - Small and large, from 1000hp to 100MW.
- Provided technical direction for 6 different acquisitions of total 57 turbine trains.
- Inspected and verified 20 repair shops worldwide.
- Performed corrective actions and conducted life improvement programs, uprates and modifications in gas and steam turbines.
- Directed field research—solved severe problems over 10 years old.
- Established corporate standards for gas turbines and steam turbines.
- Investigated a large variety of failures from small cracks to total turbine losses, i.e. compressor and turbine blade cracks, bearing failures, wheel creep rupture, wheel spacer failure, full speed surge and axial compressor massive failure, parasitic natural frequencies of rotors within running speed, internal turbine fires, steam turbine shaft fractures, tip shroud fretting failure.
- Responsible for over 200 steam turbines rated from 500 HP to 32,000 HP.

Major Achievements:

- Directed turbine nozzle life improvement programs, eliminating premature nozzle deterioration, increasing TBOs (time between overhaul) by a factor of 2 to 3 (i.e. for 34 GE units, from 19,500 hours to 63,000 hours)—resulting in savings to the company of over \$5,000,000 per year.
- During tenure, turbine failure rate was reduced by a factor of 10 (from 3 per year to 1 in 3 years)—saving over \$6,000,000 per year.
- Specified design modifications (i.e. superalloy wheels instead of high alloy steel, proper turbine blade coatings, redesign and material upgrade of turbine nozzles for 22 new turbines before delivery)—that resulted in a \$7,000,000 savings plus avoidance of substantial production losses by elimination of failures experienced by others.
- Reduced the refurbishment turnaround time of hot gas path parts from 6 months to 6 weeks—reduced inventory of these parts by two thirds.